

Focal plane wavefront estimation for Space Mission Coronagraphs

Completed Technology Project (2016 - 2017)



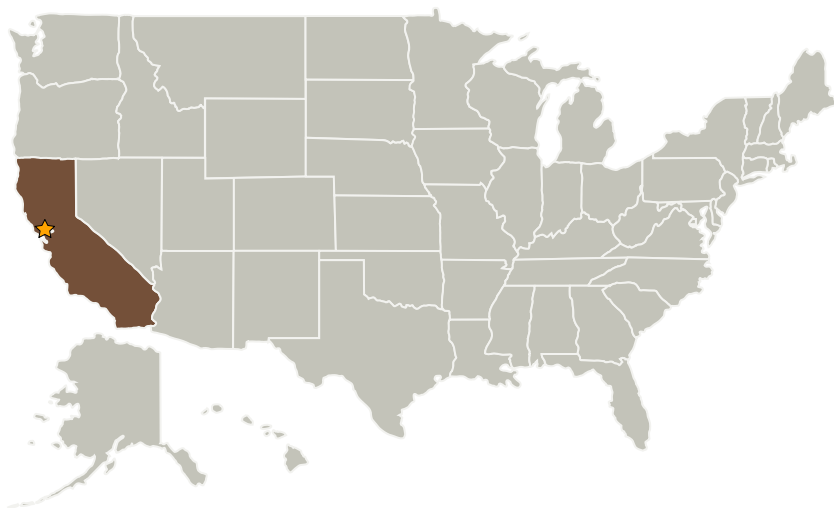
Project Introduction

As part of the FY17 CIF effort, we have developed a novel method that uses a set of unknown random correlated pupil plane aberrations to obtain a high accuracy estimate of wavefront errors in an optical system.

Anticipated Benefits

Our proposed method uses a deformable mirror (DM) or any other source of random optical wavefront modulation (such as atmospheric turbulence) in an optical system to provide a high accuracy estimation of wavefront aberrations. Our solution does not require any additional optical elements and is free from non-common optical path errors. This benefit is especially important for exoplanet imaging space missions, because it allows us to simplify the layout of the coronagraph and improves the accuracy of the coronagraph model.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California



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Primary U.S. Work Locations

California

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Center Innovation Fund: ARC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Harry Partridge

Principal Investigator:

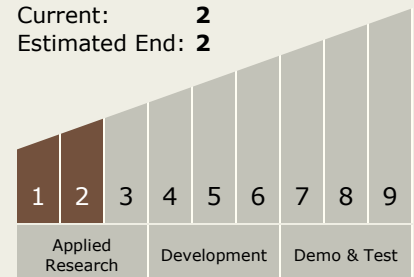
Ruslan Belikov

Technology Maturity (TRL)

Start: 1

Current: 2

Estimated End: 2



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.2 Observatories
 - └ TX08.2.1 Mirror Systems

Target Destination

Outside the Solar System